Application No.: 10/709,002
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Title: RAY-BY-RAY FOURIER IMAGE
       RECONSTRUCTION FROM PROJECTIONS

ABSTRACT

Two-dimensional or three-dimensional images of the distribution of a property of an object are formed by passing rays of radiation through the object and detecting how much each ray is attenuated. The Fourier transform is taken of each individual ray but only the zeroth term of the transform along the path of the ray is retained. Each of these transforms is added into a two or thee-dimensional array. If the three-dimensional distribution is being imaged, the transform is a plane of numbers, which is added into the three-dimensional array at right angles to the path of the ray. The numbers in the array are corrected for the non-uniform density of data. After enough such rays in enough different directions are applied, the distribution of the property is obtained by taking the inverse Fourier transform of the data in the array.